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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,251	10/09/2003	Juha Lehtonen	2835-0143P	7510
2292 7590 02/26/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER NGUYEN, TAM M	
			ART UNIT 1764	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	02/26/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 02/26/2007.

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## Office Action Summary

**Application No.**

10/681,251

**Applicant(s)**

LEHTONEN ET AL.

**Examiner**

Tam M. Nguyen

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7, 9, 11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9, 11 and 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 4, 2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stine et al. (US 5,847,252) in view of Lyman et al. (US 2,135,823).

The Stine reference discloses a process for producing a motor fuel component that comprises paraffins. The process comprises hydrotreating an olefinic stream obtained from a process in which butenes are dimerized. This olefinic stream contains C<sub>8</sub> through C<sub>12</sub> hydrocarbons. The hydrotreating is performed by passing the olefinic stream through a series of two reactors. Each hydrotreating reactor contains a catalyst such as a noble metal on an alumina support. The preferred reactors contain a fixed bed of catalyst. As shown in the figure, the reactants flow downward through the catalyst beds. It is clear that these reactors are trickle bed reactors. The effluent from the hydrotreating reactors heats the oligomerization zone feed. Conditions in the hydrotreating reactors include temperatures ranging from 2000 to 600°F (930 to 316°C) and pressures ranging from 100 to 1000 psi (6.9 to 69 bar). Hydrogen to hydrocarbon ratios range from 0.1 to 2. See column 2, lines 52-67; column 3, lines 1-7; column 4, lines 58-67; column 5, lines 1-27, column 11, lines 50-67, column 12, lines 1-5 and 58-67, column 13, lines 1-3, column 14, lines 20-54, and the figure.

The Stine reference does not specifically disclose that the feed is in liquid phase, does not disclose that the feed composition or that the feed contains sulfur compounds as claimed, does

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not disclose the amount of metal on the catalyst as claimed, and does not disclose the specific conditions for each reactor.

The Lyman reference discloses that the olefins to be oligomerized may contain sulfur and this sulfur may be removed in a hydrotreating step. See page 4, right column, lines 20-35; page 5, left column, lines 48-61; and page 5, right column, lines 37-48.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Stine by utilizing a liquid feed for the hydrogenation process because it would be expected that the results would be the same or similar when using a vapor feed or a liquid feed because the state of the feed before entering the reactor is not important, but the operation conditions of the hydrogenation is.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Stine by utilizing a sulfur-containing stream because, as shown by Lyman, such feeds can be used to produce the desired products of Stine. By using a sulfur-containing feed, the product would necessarily be desulfurized in the hydrotreating step of Stine.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the Stine by using a feed containing the olefin types and amounts as in claim 1 because such a feed falls within the class of feeds disclosed by Stine and therefore would be expected to be effectively treated in the process of Stine.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Stine by using catalyst metal amounts as in

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claims 5 and 6 because one would use the minimum amount of metal that is effective because noble metals are expensive.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have used conditions as claimed in the process of Stine because such conditions are within the ranges disclosed by Stine.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Stine by utilizing a liquid feed for the hydrogenation process because it would be expected that the results would be the same or similar when using a vapor feed or a liquid feed because the state of the feed before entering the reactor is not important, but the operation conditions of the hydrogenation is.

### ***Response to Arguments***

The argument that in the Examples of Stein, the feed to hydrogenation zone contains only 10% of heavier components ( $C_7$  or heavier) and thus it is evident that the feed is in the vapor phase is not persuasive because the invention of Stein does not limit to Examples. Stein teaches that the feed comprises  $C_8$  through  $C_{12}$  olefins. Also, the examiner has modified to use a feed having the claimed composition and in the liquid state.

The argument that Trickle-bed reactor are three phase reactors with operating principles that differ significant from other reactors and the three-phase reaction necessarily occurs between gaseous and liquid reactants is not persuasive because as show in the figure of Stine, the reactants flow downward through the catalyst beds and the examiner has modified the process of

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Stine by using the claimed feed in liquid state, so the reactor of Stine would operated as trickle bed reactors as claimed.

The argument that, unlike the process of Stein, the process according to the present invention does not require circulation of hydrogen is not persuasive because the evidence is not in the claims.

The argument that Stine fails to teach or suggest the use of a feed as claimed is not persuasive because the examiner maintains that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the Stine by using a feed containing the olefin types and amounts as claimed because such a feed falls within the class of feeds disclosed by Stine and therefore would be expected to be effectively treated in the process of Stine.

The argument that Sine fails to disclose the use of a feedstock comprising 1-1000 ppm of sulfur compounds and Lyman is directed to a process for the production of motor fuels from the polymerization of normally gaseous olefins is not persuasive. The examiner relied upon Lyman to teach an olefinic feed comprising sulfur compounds. One of skill in the art would motivate to use any feed including comprising olefins from C<sub>8</sub> through C<sub>12</sub> including a feedstock form Lyman and it would be expected that such feed would effectively treat in the process of Sine.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452. The examiner can normally be reached on Monday through Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tam M. Nguyen  
Examiner  
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TN